

AGRICULTURAL NEWS

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This publication contains information regarding new developments of interest to agriculture based on laboratory and field investigations by the Du Pont Company. It also contains published reports of investigators at agricultural experiment stations and other institutions as related to the Company's products and other subjects of agricultural interest.



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L. F. Livingston, Manager

William H. Lander
Editor

M. H. Bruner, Extension Division, Du Pont Co., Clemson, S. C.	W. A. Dew, Extension Division, Du Pont Co., San Francisco, Calif.	V. S. Peterson, Extension Division, Du Pont Co., Ames, Iowa
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NEW METHOXYCHLOR CAPACITY UNDER CONSTRUCTION

Additional facilities for the production of methoxychlor, basic ingredient for a new line of insecticides, and methoxychlor compositions are scheduled to be in operation at the Linden, N. J., plant of the Grasselli Chemicals Department of the Du Pont Company late this fall.

The demand for methoxychlor and its various formulations has increased greatly since its effectiveness in the control of many insects and its low toxicity to humans and animals became recognized.

The Du Pont Company introduced methoxychlor in 1947, after five years of investigation of insecticidal efficiency, crop safety and toxicity to warm-blooded animals. The United States Department of Agricultural in April of this year recommended its use on dairy animals, dairy barns, on forage to be fed to dairy animals, and on other animals being finished for slaughter. Although the present facilities at the Grasselli works in East Chicago, Ind., are producing substantial quantities of methoxychlor insecticides, they have proved to be insufficient to meet the present demand. The new production should meet expected demands by next season.

The new facilities at Linden will manufacture "Marlate" 50 and Du Pont Dairy Cattle Spray insecticides, containing methoxychlor, as well as other formulations.

Methoxychlor is a synthetic organic insecticide. Like DDT it has high insecticidal efficiency; however, it has proved to be much less toxic to man and warm-blooded animals.

Methoxychlor insecticides have the advantage of low toxicity to man and animals, quick-acting efficiency against certain insects, such as flies, safety for use on sensitive plants, and do not tend to accumulate in body tissues of animals. An incidental advantage of the new products is that they have shown efficiency against flies which have developed a resistance to DDT.

NEW CATTLE SPRAY AND DIP INTRODUCED TO COMBAT
CATTLE FEVER TICK IN UNITED STATES AND ABROAD

The Du Pont Company announces the general release of its new Cattle Spray and Dip No. 30, which was rushed to production this summer to help cope with the spread of the cattle fever tick in Florida. It is now available for wider uses in the United States and abroad.

Active ingredients of the new formulation are DDT and benzene hexachloride. They proved effective for the control of cattle fever tick in extensive tests carried out by the Bureau of Animal Industry of the United States Department of Agriculture in Mexico. Those experiments were conducted in 1946 on the Mariposa ranch, in the state of Coahuila, in cooperation with Mexican officials and Mexican cattlemen. Later experiments confirmed the results obtained in Mexico.

Although the new formulation was packaged by the Du Pont Company especially for use in the recent emergency in Florida, it anticipates a market for it in Texas, Puerto Rico, Mexico, and other countries in Latin America, where cattle fever tick has existed for a long time. Du Pont Livestock Dip and Spray No. 30 is also effective against many other livestock pests commonly found in the United States and other countries. It may be used on sheep and goats, on horses and mules. It is convenient to use, because it contains DDT and benzene hexachloride already mixed in the proper proportion, and of the proper particle size for making up sprays and dips.

Cattle Fever Has Interesting History

Cattle fever, also commonly known as "Texas fever," is technically called piroplasmosis. It is a specific infectious blood disease of cattle caused by minute animal parasites known as prioplasmae which are conveyed to the animal by the cattle fever tick. At one time it was prevalent over vast areas of the United States -- in the Southeast, the Southwest, and in the southern half of California as well as in Mexico and other Latin American countries. It has an interesting history.

According to W. M. MacKellar (*) the generally accepted theory of its origin "is that it was introduced into the West Indies and Mexico during the Spanish colonization of those countries and from there reached the United States."

Among the earliest records of it in the United States is a report of an outbreak in Lancaster County, Pa., in 1796, attributed to cattle brought from South Carolina.

(*) W. M. MacKellar, principal veterinarian and chief, division of tick eradication and special diseases, Bureau of Animal Industry, U.S.D.A. writing in "Keeping Livestock Healthy," Year Book of U.S.D.A. for 1942.

It is worth noting that, even before the discovery that malaria was transmitted by the mosquito, it was demonstrated that cattle fever was transmitted from one animal to another by the tick. Dr. MacKellar said that cattlemen of the West had for a long time advanced the theory that the fever was transmitted by ticks, which Southern cattle carried to northern pastures and there scattered it. "Others ridiculed this theory. The Bureau of Animal Industry decided to investigate it, and the conclusive experiments conducted by its scientists, Dr. Theobald Smith and Dr. Fred L. Kilborne, in 1889 and 1890 established the fact that cattle tick infestation was necessary in the transmission of the disease. They thus showed irrefutably and for the first time that an infectious disease could be transmitted by an intermediate host or carrier from one animal to another. About that time Dr. Cooper Curtice, also of the Bureau of Animal Industry, made noteworthy contributions to knowledge of this subject by his studies and description of the life history of the cattle tick. This pioneer work opened a new field in medical science and pointed the way for studies that later solved the problem of the spread of such diseases as malaria, yellow fever, Rocky Mountain spotted fever, typhus and others."

Active Campaign Against Tick Began in 1906

In 1906 the various states and the United States government initiated an energetic eradication program against this parasitic enemy of cattle. The cattle fever tick eventually was all but eliminated from the United States, except for several counties in Florida where it was presumably harbored by deer; in some parts of Texas, near the Mexican border; and in isolated areas of Georgia, and North Carolina. The cattle fever tick, however, continued to exist in Mexico and Caribbean areas adjacent to the United States. As long as it exists there, it is a potential threat to livestock in the United States. For this reason, the Bureau of Animal Industry continued to do research on the subject outside of the United States. In 1946, for example, it carried out extensive investigations in Mexico, using the new organic insecticides, DDT and benzene hexachloride, which had not been tried in previous campaigns against the fever tick.

In the United States, the Bureau of Animal Industry was also alert to the spread of the cattle fever tick, and its field men in Florida this spring noticed an increase of the ticks there. It warned Florida cattlemen of the danger that faced them. Those affected by it sought a speedy and effective spray to control the insects.

Florida Cattlemen Seek New Spray and Dip

It was at this juncture that a request came to the Animal Industry Division of Du Pont's Grasselli Chemicals Department from an agricultural editor in Florida, acting for the Florida Cattlemen's Association, to see what Du Pont could do to help. He told of the quarantine that had been imposed on 130,000 head of cattle in various counties of Florida.

The editor explained the disruption of the cattle markets which would follow if cattle were to be held up for as many as 30 days following dipping as when the usual arsenical dips were employed. He stressed the need for a simple chemical test to determine the strength of insecticides in vats, so that DDT and benzene hexachloride mixtures might be used. It was known, through the work of the United States Department of Agriculture, that these mixtures were effective against ticks. It was now necessary to find some way of testing the dipping solution in the vats, to make sure that effective levels of the insecticides were being maintained during the dipping process. So, besides developing the improved formulation, Du Pont also developed a "vat-side test".

Du Pont Livestock Spray and Dip No. 30 has the proper ratio of active ingredients to control not only the fever tick, but also other kinds of ticks and other external pests of range cattle and horses, such as flies, lice and mange mites. It will also control all the economically important ectoparasites of sheep and goats, including lice, keds, and scale mange. The ingredients are as follows: DDT - 38.1%; gamma isomer of benzene hexachloride - 2.3%; other isomers of benzene hexachloride -- 12.2%; inert ingredients - 47.4%. It is being marketed in 11 and 55 pound bags. Recommended concentrations are 11 lbs. per 100 gallons of water for cattle, and 22 lbs. per 100 gallons for sheep and goats. The product is made at the new plant of the Grasselli Chemicals Department in Houston, Texas.

AIRPLANE DUSTERS TAKE COLLEGE COURSE

A course for airplane crop dusters and sprayers, attended by 28 pilots and operators, was conducted at the College of Agriculture, Rutgers University, at New Brunswick, N. J., this spring. Dean William H. Martin, a World War I fighter pilot, said its success demonstrated that crop dusting and spraying by airplanes is not a "fly-by-night" business.

Paying their own way, the pilots studied a variety of subjects. They studied the nature and control of plant diseases, life cycle and habits of insects, the proper insecticides to use, how to pick the best weather for dusting and spraying.

Dr. Bailey B. Pepper, head of the entomology department, said that the students were already aware of the need for caution in regard to possible fruit and crop damage from drift. He said the teachers were plied with "questions that ranged from how potato blight originates to the life cycles of leaf hoppers and asphids." Former Army and Navy officers were included in the student body.

DU PONT PRESIDENT CRAWFORD H. GREENEWALT SAYS
AMERICANS MUST PROTECT BIRTHRIGHT OF FREEDOM

Lest Americans lose their birthright of freedom, "we must jealously protect the individual liberty which is the essence of progress and resist any attempt at coercion and regimentation, whether that attempt be made by business, by labor, or, most important of all, by government," Crawford H. Greenewalt, president of the Du Pont Company, said in a recent speech at Troy, N. Y. He traced the development of the American nation and its people in the industrial economy they themselves chose, and told the American Society for Engineering Education, meeting at Rensselaer Polytechnic Institute:

"We have had the privilege of self-determination; we have had the prohibition that brooked no interference with that privilege, and we have become great.

"But today many of us appear to be demanding guarantees that this high standard of living will be forthcoming from the cradle to the grave, no matter what our abilities, no matter what our contributions to the common good. In that demand lies great danger, for there can be no guaranteed security that does not come sooner or later in conflict with individual liberty.

"Guaranteed security means simply that what you do not do for yourself will be made good by legalized piracy practiced on your more able neighbor," Mr. Greenewalt continued.

Government's Resources Necessarily Limited

"I think that right here we must draw a sharp distinction between what we should like to do and what we actually can do. All of us would like to see security for every man, woman, and child in the world. No one is in favor of privation.

"But we must realize that no government has resources that do not come from its people; no government can undertake to pay someone without, at the same time, taking from someone else. When a government undertakes to guarantee security, health, or any other so-called social benefit, it is simply guaranteeing that it will rob Peter to pay Paul."

Referring to the importance which the people of the United States have always given to the doctrine of individual freedom, Mr. Greenewalt said:

"Freedom has its imperfections but they are the imperfections that arise from the human failings to which we are all subject and can be cured only as human beings progress spiritually and naturally to a greater thoughtfulness for their neighbors.

"But in that forward movement we must jealously protect the individual liberty which is the essence of progress and resist any attempt at coercion and regimentation, whether that attempt be made by business - by labor - or, most important of all - by government.

"I have said before that we are in great danger of losing our birthright of freedom. We are making steady progress toward that degraded condition that has been variously called "statism", "socialism", and "communism". We have seen the plunge taken completely by Russia, where the individual is nothing and the state everything. We have seen England lose her position as a great nation because her people have allowed a misguided government to remove the individual incentive that is the only path to advancement.

"We are taking the same journey and will reach the same end unless we are courageous enough to reaffirm those principles of self-determination that motivated our forefathers.

Cost of Subsidies Is Staggering

"It is proposed that we embark on a program in which health is guaranteed, in which education is guaranteed, in which housing is guaranteed, and in which even charity is to be guaranteed. And who is to meet these guarantees? Clearly it is not a government that has no resources that do not come from its people. Clearly it is not the wealthy whose income is already virtually confiscated. It is simply the rank and file of us who are agreeing to a wasting of our substance to meet ends over which we have no control or, in the alternative, to foist upon our children bills that we incur in the full knowledge that we will never be able to pay them.

"We are proposing also to guarantee to our farming population a fixed income, irrespective of what the rest of us may earn, to subsidize indefinitely a high price for the food that is the most essential element in our living.

"The cost of these things is already staggering. In England, 40% of the country's income is channeled through government; here the figure is near 30% and must go ever higher if the programs now being sponsored become effective.

"Through these guarantees of security we are robbing ourselves in two ways: from the recipient of our enforced charity, we are removing incentive to take care of himself; from the donor, we are removing incentive because the load that he carries is so heavy that it becomes fruitless for him to attempt to better his condition."

Our Economic System Must Be Understood

Mr. Greenewalt, a graduate engineer himself, told his audience made up of educators in engineering, that most young people being graduated were entering a world in which the traditional guideposts have become obscured. He pointed out that many of them are approaching their adult lives with a background of misunderstanding and mistrust of a system which offers them opportunity.

"If we are to preserve the freedoms which have made us great," he continued, "we must be very clear as to what they are and what they mean, for it is only in that way that we can avoid the creeping socialism whose waters have nearly submerged Great Britain and are now rising about us in this country."

"In speaking of economic systems we talk about 'socialism' and 'communism' when we mean 'bondage,'" Mr. Greenewalt declared. "We talk about 'free individual enterprise' or 'capitalism' when we mean 'freedom.'"

He referred to the title assigned him -- "The Factors Affecting Industrial Activity" -- and emphasized that industrial activity is an effect, not a cause. And he added, "If we do not safeguard our individual liberties, we will soon have no industrial activity to discuss."

NEW PLANE LOADER ON FARM SAVES TIME

A loader designed and built by O. C. Trullinger, an Arkansas rice farmer, makes it easy to get fertilizer and seed into airplane hoppers, the University of Arkansas College of Agriculture reports from Stuttgart, Ark.

A single worker can operate the loader. Normally, four to six men were needed. The machine completes the loading in one minute, in contrast to five to eight previously required. County Agent W. O. Hazelbaker, Jr., reported that the new equipment also eliminates the danger of damage to the plane from backing a truck too close to it.

Cost of the loader was about \$280. It is used on Mr. Trullinger's farm and for custom work on neighbors' farms. The hopper of the loader holds 1200 pounds of fertilizer, a full cargo for one plane. The loader has a 12-foot elevator with a canvas spout, held open by metal rings. A canvas skirt on the spout covers the plane hopper so wind cannot blow seed or fertilizer into the operator's face. Mounted on a tractor, the loader is powered by the tractor engine.

"TWO-SIXTY-TWO" FEED COMPOUND GIVES GOOD RESULTS
WITH YEARLING STEERS IN TRIAL AT SPUR, TEXAS

Urea, an organic compound high in nitrogen which is converted into digestible protein by bacterial action in the rumen of cattle, was found to be an excellent protein supplement in the fattening ration of yearling Hereford steers in an experiment conducted in 1947-48 at the Spur, Texas, Substation No. 7.

In this study, a 43% protein supplement containing urea (prepared from 36% cottonseed meal by the addition of 2.3% of "Two-Sixty-Two" feed compound) was compared with regular 43% protein cottonseed meal. Practically no difference in weight gain resulted between steers fed the regular 43% protein cottonseed meal, or the 43% protein equivalent cottonseed meal, which contained urea as well as cottonseed meal.

The average initial weight of the steers was 778 pounds for those subsequently fed the regular protein diet and 777 for the lot fed the urea-containing ration. Final weights after 140 days were 1062 and 1059 pounds, respectively, giving average daily gains of 2.03 and 2.02 pounds. Thus, the average daily gains for the two 43% protein supplements was, to all intents and purposes, the same.

A mimeographed Progress Report of the Texas Agricultural Experiment Station at College Station, entitled "Cattle Series 71," by P. T. Marion, agent in nutrition investigations; R. E. Dickson, superintendent; and C. E. Fisher, agronomist, at the Spur station; and J. H. Jones, animal husbandman at Texas A. and M. College, has a section entitled "Protein Supplements Containing Urea for Beef Production." It says:

"The shortage of protein supplements has created a need for finding means of extending the protein supply. Urea is one of the materials under study."

It explains that the conversion of urea nitrogen in the animal's rumen "is accomplished by the action of certain micro-organisms found in the rumen which can break down indigestible food materials and convert them into digestible materials."

"Two-Sixty-Two" Added To 36% Protein Cottonseed Meal

The urea-containing protein supplement was made for a 36% protein cottonseed meal raised to a 43% protein equivalent by the addition of "Two-Sixty-Two." A lot of ten steers was fed this protein supplement at the rate of 4 pounds per head daily, while a second group of 10 steers was fed an equal amount of the regular 43% protein cottonseed meal. In addition to the protein supplement, both lots of steers received similar amounts of sorghum grain, sorghum silage, and cottonseed hulls in the complete ration.

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: Lots of people know something about the amount of useful work :
:
: a good county agent does for the farmers and others in his community. :
:
: It is not always that this work is recognized. ESSO FARMS NEWS in its :
:
: March-April, 1949, issue did a good job in this direction by describ- :
:
: ing the record of Bill Stempfle of Steuben County, N. Y. With the per- :
:
: mission of the editors, we are reproducing the article herewith. :
:
:.....

ASK THE COUNTY AGENT

Here's Bill Stempfle's Role in Twenty-five
Years of Progress in Steuben County, N. Y.
--- from ESSO FARMS NEWS,
March-April, 1949

If you can work all day, imparting knowledge
Without sufficient time for sleep or play,
If your reports and records for the college
Are ready for the mail on Saturday,
If you can keep it up, not lose your spirit
And never let your nerves disturb your joy,
It surely is the job for you, secure it,
You will make a county agent yet, my boy.

THE ABOVE excerpt is from a poem written several years ago by a county agricultural agent, D. Watson Atkinson, Delaware County, Pa., and appeared in "Agricultural Leaders' Digest." Such a poem would require several more verses to make it fit William "Bill" Stempfle who has passed the quarter-century mark as county agent in Steuben County, N. Y.

One line of the poem would tell about Bill's belief that a county agent should not necessarily be a preacher nor a college professor, but should be an expediter to help farm people adopt better farming methods. Another line would explain his firm belief that farmers need a vacation, but it would require several lines to tell how Bill tries to see to it that his farmers take vacations by organizing field trips and field days in other potato producing areas as far away as Maine and Michigan. These lines would tell how

he has organized tours of farmers to visit industrial areas like Detroit and now in response to the request of farmers, he will organize a seven-day Great Lakes cruise for Steuben County farm people.

Perhaps an entire verse would be needed to tell how Bill has led the way in making Steuben County into "Little Maine" in potato production and how he has seen his long-time potato development program bring more than 1,000 new people into the county. The verse would tell how a million dollars' worth of land changed hands, how potato storage houses of as much as two million-bushel capacity were built and how a railroad, slated for abandonment, was reactivated.

This verse might also tell of Bill's golden potato, presented to him by farmers as a token of appreciation for his leadership in building a more prosperous agriculture in Steuben County around potatoes.

Another verse would be needed to tell how, soon after graduation at Cornell University at Ithaca, N. Y., he came to take over the county agent duties at the county seat, Bath, with only a secretary to assist him in an office that now includes five other persons. It would tell how membership in the County Farm Bureau has grown from 478 to 3,000 in twenty-five years. It would have to include something about Bill's program of business men, civic club leaders, editors and others working together with farmers for a better farming program.

Perhaps another verse could briefly explain his successful efforts to develop dairying in Steuben. A line could cover his launching of a grape festival in 1931 but several lines would be required to tell how he helped set up a livestock market and then "beat the bushes" to get farmers to bring their stock into this market -- the forerunner of the State Livestock Marketing Association.

No tribute to a county agent could cover Bill Stempfle unless it included something on "Bill Stempfle Day", his twenty-fifth anniversary in Steuben County, a celebration with a parade of twelve school bands and twenty-five floats, banquets and tributes that exceeded anything yet staged in the county. Of all the tributes which farmers and other people of the county paid to Bill, typical was one salute which included this statement:

"To you our long-time and loyal friend, we are indeed deeply indebted. For it was you who truly snapped on the lights for better farming and better rural living and made us farmers a vital part of a quarter of a century of agricultural progress in Steuben County . . ."

Two other things would have to be said about County Agent Stempfle. One would be his plans for all the other things he hopes to do in the future for Steuben County -- better farming, nicer vacations for farm people and a better-rounded agricultural county. The other would be his modesty which made him one of the most difficult subjects Esso Farm News has tried to write up and photograph.

SWEEPING CHANGES IN POULTRY FARMING DESCRIBED BY
UNIVERSITY OF MASSACHUSETTS EXTENSION SPECIALIST

Recent sweeping changes in poultry farming that are cutting costs, reducing risks, and improving the efficiency of egg and broiler meat production are discussed by G. T. Klein, widely known extension specialist of the University of Massachusetts in an interesting article.

In the story, "Our Changing Poultry Industry," in the April, 1949, "New Jersey Farm and Garden," Mr. Klein writes:

"Our starting and growing rations have been increased in energy and growth promoting factors, reduced in fiber, to give bigger birds on less feed.

"Laying and broiler pens have been expanded in size to save expensive labor.

"The fear of 'dirty' litter has all but vanished.

"Newcastle disease has been harnessed through vaccination.

"Breeding and special attention to meat qualities have given a better shaped, more efficient broiler.

"Automatic feeding has been introduced for both broilers and layers."

RATIONS

There has been a virtual reversal of earlier ideas on starting rations for both turkeys and broilers and even for replacement chicks, Mr. Klein reports. Cornmeal, he finds, long condemned as a cannibalism-causing ingredient in mixtures, is now being fed at a 70 percent rate in mashes without trouble.

Fiber, on the other hand, long valued as an anti-cannibalistic factor, has now dropped to about the lowest level possible.

"It appears we may have been entirely wrong about corn," Mr. Klein writes.

"Broiler growers who feed these high energy low fiber feeds, usually similar to the Connecticut Broiler Ration, can make a pound of broiler for three and a half pounds of feed or less with 13-week-old birds.

"That means 30 pounds of meat out of a 100-pound bag of mash.

"Producers of 10-week-old broilers can turn out a pound of meat for two and a half pounds of mash, while it is not uncommon for the conventional feeds to require four to four and one-half pounds of feed for a pound of meat.

"Turkeys grown on these new feeds are making a pound of gain at 24 weeks for as little as three and three quarters pounds of feed.

"The replacement pullet grown for a layer can be fed for a short time on this new type of feed. The limit is about six or eight weeks, when, after a quick early start, she needs to be slowed down on a regular growing mash and grain."

BIGGER PENS

Mr. Klein reports that the 20-foot, and even up to 24-foot, laying pens have been found not entirely adequate for market egg or hatching production.

"Now, the minimum house built on most farms is 30 feet, and the preference is for 40-foot buildings," he writes. This is not the maximum by any means. There is no disadvantage in having one thousand or even several thousand birds in a pen, unless it be a slight disadvantage in culling, vaccinating, and handling."

Pen arrangement, running water, clean nests, well planned egg rooms, and a feed room convenient to the pens, the author finds, are more important than pen size for step saving.

"Broiler growers can now figure on 20,000 birds per man for the 13-week growing period," Mr. Klein states, "if they have large houses, hot water heat, feed carriers, waterers and the like.

"While pens are planned for 1000 to 2000 birds, there seems to be practically no limit to the number that can be raised in a room."

HEATING

He finds poultrymen are divided as to the optimum type of hot-water brooding. Under-the-floor or radiant heating is winning many converts, but most growers prefer the economy of pipe installation. In the author's own opinion, there is nothing better than one and one-half inch diameter hot water pipes, set eight to nine inches above the floor. Circulators improve heat distribution.

FEEDING

In search for ways to cut feed wastes, some growers were increasing feedings from two to three times a day to six times. In this way they fed from the bottoms of hoppers to prevent hooking of feed from the trough. Growers carefully watched how hoppers were filled to save spill and they made sure that feeders were chosen in sizes to fit chicks. Most growers decided four sizes of feeders were needed: cardboards for starting; chick size to about three weeks; intermediate size to six weeks; and large size for broiler age or range size.

"Then came Paul Lavitt's 'Lectromatic' feeder," Mr. Klein writes. "An electric motor dragging a couple of log chains through the feed supply bin and feeders running around the brooder house room distributes feed every 30 minutes.

"It's set with a time clock and runs a minute and a half for small chicks, up to seven minutes for full sized broilers or pullets.

"While Lavitt's feeder is used on his East Longmeadow, Mass., farm and elsewhere, it is still too early to know all the possibilities of it. Bulk feed looks like a possibility; and the 20,000 birds a man can handle with hand feeding can easily double or treble if he has adequate houses."

"DIRTY" LITTER

Representative of the changing practices in the industry is the new attitude toward "dirty" litter, Mr. Klein pointed out. Poultrymen first began allowing the litter to lie in houses throughout the winter or in the brooder house for the entire brooding period to get improved dryness and to save work. Then braver spirits began letting the litter lie from one year to another and also from one brood to another, and this, too, worked out satisfactorily.

Now both practices are on the increase and the growers have the opinion of researchers to back them up with the finding that vitamins essential to growth occur in the built-up litter and these promote faster chick growth and better egg hatchability.

EGG WASHING

Once more, poultrymen are returning to the discussion of washed eggs. There are now mechanical washers on the market and soapless detergent compounds are being used to clean eggs. Hundreds are giving washing a trial, though the practice was long tabooed.

IMMUNIZATION

Poultry raisers are increasingly turning to immunization rather than to avoidance to avert infectious scourges. The best control for coccidiosis so far is a combination of building immunity and the use of sulfa drugs to combat the infection and at the same time to build resistance.

"Yes, the poultry industry is on the march," concludes the writer, "Everywhere flocks are growing larger in size and the so-called 'farm-flock' of 100 birds is giving way to units that make good care of birds and eggs worth while. The commercial grower is rapidly coming into a place in the sun."

INTERESTING NEW USE FOR SEED DISINFECTANT FOUND

Excellent results in the control of sugar beet blackroot in Michigan by using fertilizer mixed with "Arasan" tetramethyl thiuramdisulphide seed disinfectant are reported in the Sugar Beet Journal for March-April 1949.

Originally developed as a seed treatment for peanuts and garden vegetables, "Arasan" has been found effective as a soil treatment in the beet fields. The "Arasan" protects the beets through the germination and early growing stages. It is precisely at that point that the heaviest crop losses had occurred in the past.

The Sugar Beet Journal reproduces a picture of a six acre field, belonging to Alfred Vincent, at Durand, Michigan, which, it says, "had a very bad blackroot history." Half the field was untreated, and none of the plants came up there. "Remarkable benefits" are shown by the treated half.

"In the Alfred Vincent field," said the Journal, "two preceding crops had been lost to the disease, as well as the first planting in 1948. But 100 pounds of fertilizer with a small percent of the chemical added, gave remarkable control. The practically complete plant mortality where no chemical was added indicates the toll that otherwise would have been taken by the disease. All the field was treated save for a strip of less than an acre in the center, left for test purposes." In the first 1948 planting which was wiped out, the Journal said that 200 pounds of fertilizer were used without any seed treatment.

Canadian Tests Showed Good Results

The conclusions reached in the article are that use of "Arasan" in the soil "is sufficient to give excellent stands," even though "experience of past work shows that ... control is not complete." It points out that it is essential that the chemical be in contact with the seed, and that placement below or to one side is not good.

Fertilizer with tetramethyl thiuramdisulphide was used on only 100 acres in Michigan in 1947, but the total rose to 400 in 1948. The Journal predicts that it may go up to 10,000 acres in the near future.

"Tests along these lines have been conducted in a number of other areas for several years, notably Canada, Wisconsin, and certain districts in Ohio. At the Harrow Experiment Station, Harrow, Canada, where this work has been pioneered, tests show that under actual field conditions the number of seedlings per given space of row was increased an average of about 60 percent," the Journal added. At Harrow, best results were obtained when "Arasan" was applied at the rate of three pounds per acre with the fertilizer.

MICHIGAN STATE EXPERIMENTS SHOW B-VITAMIN
INJECTIONS ARE EFFECTIVE FOR SWINE ENTERITIS

B-vitamins are an effective cure for swine enteritis, the Michigan State College Agricultural Experiment Station, East Lansing, reported in a two-year study of the disease among pigs from 11 different farms in that state.

Thiamine, riboflavin, niacin, pantothenic acid and pyrodoxine cured 69 out of 80 test pigs suffering from this form of enteritis, said the station's Technical Bulletin 211, reporting results of the study. R. W. Luecke, F. Thorp, Jr., W. N. McMillen, H. W. Dunne, and H. J. Stafseth, conducted the study. They were aided by Carolyn Tull, M. L. Gray, Joanna R. Boniece, and Lisa Neu.

Outbreaks of certain types of swine enteritis in weaning pigs are due solely to nutritional deficiencies, the authors of the bulletin stated.

"The etiological (causative) factors which produce nutritional enteritis can usually be associated with poor conditions of feeding and management," the report said.

Several important factors were always associated with outbreaks, foremost among which was "feeding of low-protein rations made up largely, if not entirely, of cereal grains", the discussion said. In swine herds where the disease was found, corn in most cases was the major part of the diet.

It was found that in cases where a protein supplement was used, it was not added in sufficient amounts to raise the total protein content of the ration above 14 percent. In one case where nutritional deficiency was found, the protein supplement was placed in a self-feeder and large quantities of ear corn were fed twice a day.

Disease Due to Nutritional Deficiencies

The pigs in this case satisfied their appetites on the more palatable corn and consumed little or no protein supplement. In the few cases where pasture was used, it was always of poor quality. It was further observed in these cases that outbreaks of enteritis usually came in the month of July after a period of hot, dry weather. The pasture was found in a dried state, serving a no more nutritionally useful purpose than an exercise lot.

Since it was known that protein supplements are, in general, richer sources of B-vitamins than cereal grains, it seemed probable that B-vitamin deficiencies were involved in the outbreaks. Results obtained by determining the average daily excretion of the several B-vitamins indicated that niacin, pantothenic acid and pyrodoxine, followed by supplementation of the feed with the same vitamins, proved to be effective in curing 86 percent of the pigs.

The value of the injections was principally to stimulate appetite. Once some degree of appetite had been restored, the presence of synthetic B-vitamins in the relatively high protein ration promoted rapid recovery.

Since evidence indicated cases of nutritional enteritis were due to a multiple deficiency of essential nutrients, the report declared it seemed unlikely that niacin therapy alone would have proved as effective as was the use of the five vitamins combined with adequate levels of proteins.

Nutritionally deficient pigs used in the study were obtained from farms in central and southern Michigan. Both spring- and fall-farrowed pigs were included. Criteria used in picking pigs for treatment were, first, presence of diarrhea; second, a history of nutritionally inadequate feedings with rations low in protein and lacking green forage; third, absence of appreciable fever; fourth, a generally unthrifty appearance of the animals.

During treatment, the pigs were housed in concrete floored pens, and for the duration of winter months the barn was kept near 60°F. One pig from each group was necropsied and a pathological study was made of affected tissues. In addition, viscera from each of these animals was ground and fed to a healthy cholera-susceptible pig in order to make sure that cholera was not present.

The daily average gains in weight for the pigs tested varied from 0.71 of a pound to 1.21 pounds per pig. These variations in growth were due not only to differences among breeds represented, but to variations in the extent of nutritional deficiency among the different groups, says the report.

"However, the most important fact is that most of the pigs showing symptoms of enteritis did grow in response to intraperitoneal injections of B-vitamins followed by the supplementation of rations with the five B-vitamins."





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